Induce Systemic Resistance of Shallots with Endophytic Indigenous Bacteria Against Bacterial Leaf Blight Diseases

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Introduction

- Induced resistance is a physiological "state of enhanced defensive capacity" elicited by specific environmental stimuli
- This enhanced is effective against a broad range of pathogens and parasites
- Induction of plant resistance can be observed through indicators such as the activity of plant defence enzymes and production of salicylic acid
- Endophytic bacteria capable to control plant pathogens indirectly through induce systemic resistance

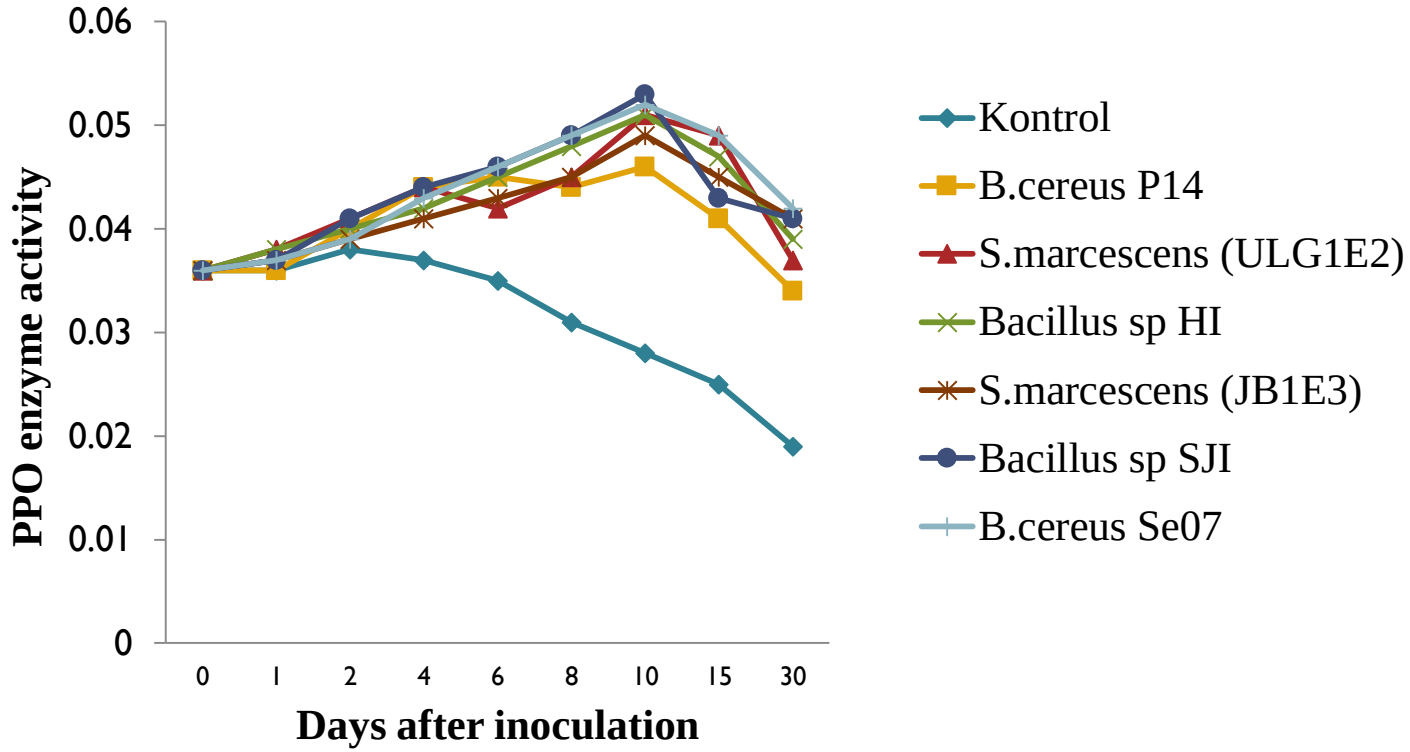
The research objectives are;

Analyzed the activity of the defense enzyme (PolyPhenol oxidase = PPO) and the production of salicylic acid in shallot that were introduced with endophytic indigenous bacteria against Bacterial Leaf Blight (BLB) Disease.

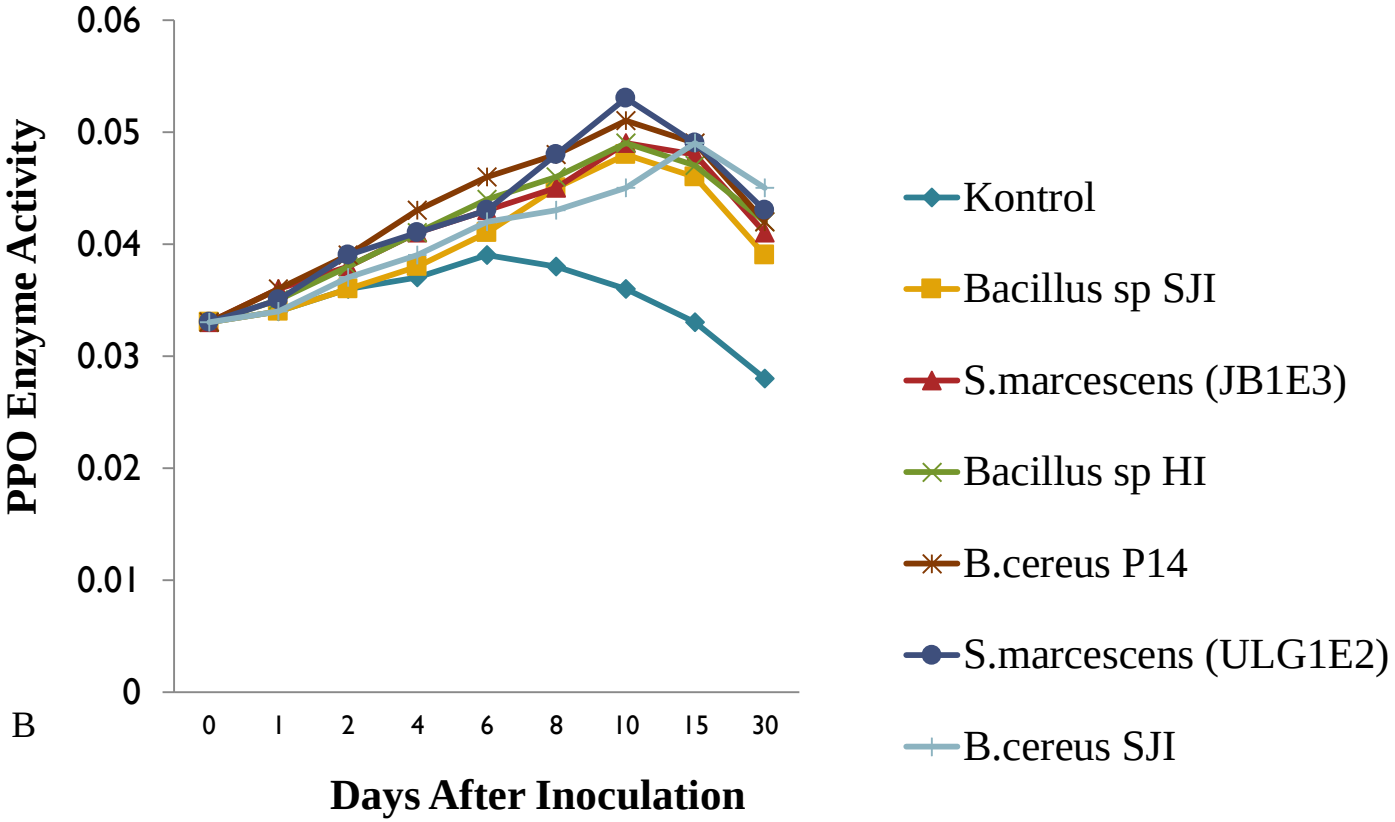
Material and Methods

- PPO enzyme analysis using Spectrophotometry
- Salicylic acid analysis with capillary electrophoresis

PPO enzyme activity on roots of shallot that was introduced with endophytic bacteria



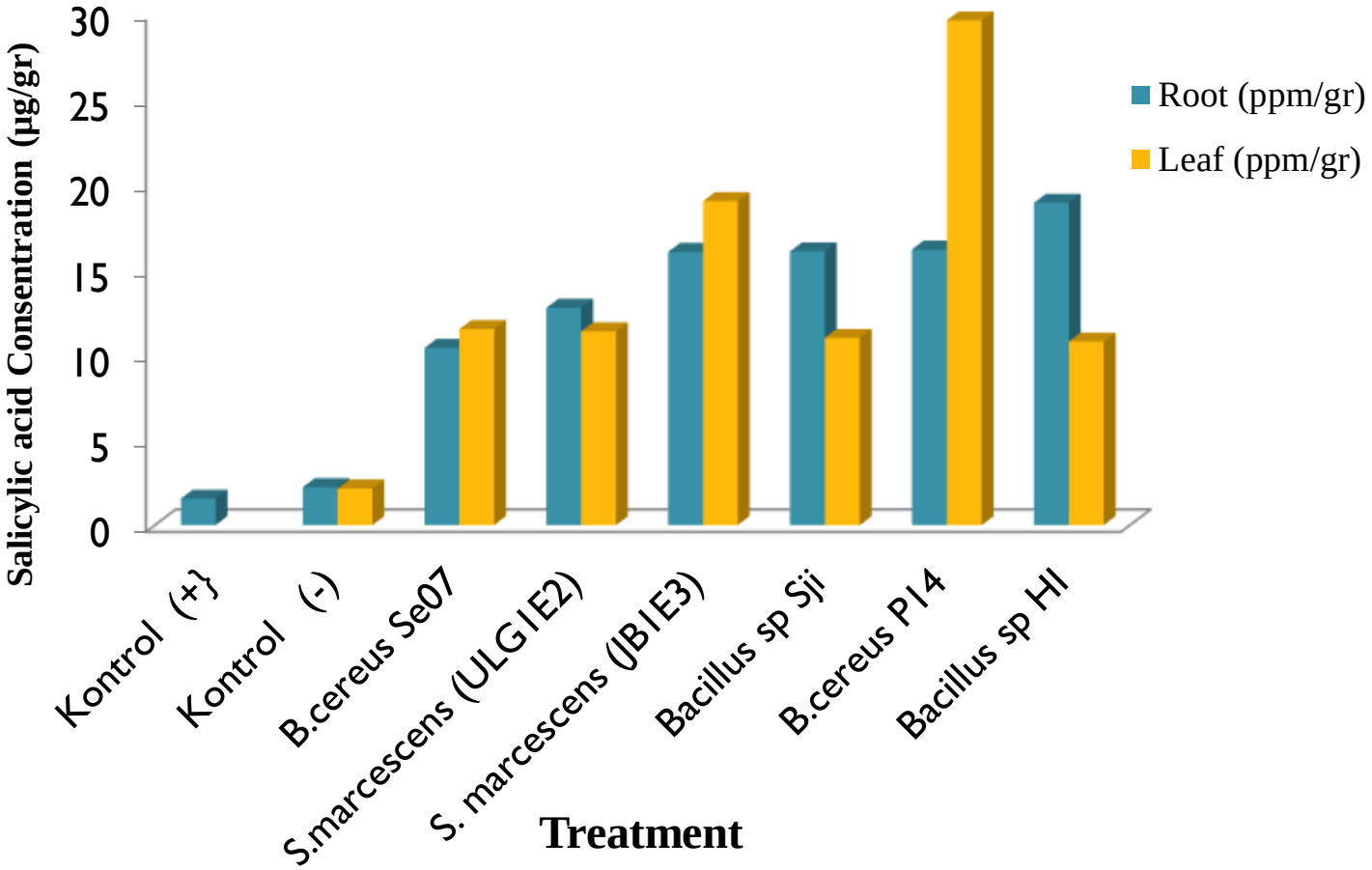
PPO enzyme activity on leaves of shallot that was introduced with endophytic bacteria



The concentration of salicylic acid on roots and leaf of shallot introduced by selected endophytic bacteria

Teatment	Root (ppm/gr)	Leaf (ppm/gr)
Kontrol (+}	1.552	0.00
Kontrol (-)	2.223	2.147
PU2E2	16.045	10.974
SN1E4	18.906	10.762
SN2E2	10.392	11.490
BD4.2E1	16.157	29.619
JB1E3	16.019	19.001
ULG1E2	12.738	11.360

Chart of the salicylic acid concentration ratio on roots and leaf of shallot introduced by endophytic bacteria



Conclution

- Endocytic bacteria (*B.cereus* P14, *B.cereus* Se07, *Bacillus* sp HI, *Bacillus* sp SJI and *S.marcescens* isolates ULG1E2 and JB1E3) were able to increased shallots resistance to BLB disease.
- The activity of PPO enzyme and salicylic acid production Increased in roots and leaf of shallot
- Endophytic bacteria colonized by *B. cereus* Se07 increased the PPO activity (0.045 µg / ml). Colonized by endophytic bacteria *B.cereus* P14 increases the salicylic acid production (29.62 ppm / g).

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